

## **Issues on Brazilian Higher Education and Scientific Research**

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The general question: what role advanced knowledge production and education can play in a “newly industrialized country” such as Brazil?

### **Some general assumptions:**

I - “Brazil is not an underdeveloped country, but an unjust country” (FHC). It is not a question of transferring know-how, or providing technical assistance. It is a question of changing institutions and working patterns so that the existing competence can be better utilized. Then, of course, foreign knowledge and expertise can and should be brought in.

II - higher education is important, and has to be improved, both in quantity and quality.

- Quantity: Brazil has about 10% or less of the age cohort enrolled in Higher Education, against 20, 30 or more for most countries in the region. Enrollment figures - about 1.5 students - have been stable since the early eighties.
- Quality. No global assessment exists, but the understanding is that the system is very unequal, with some good institutions, mostly public, and many of questionable quality, mostly private.

The country needs well-trained people in enough numbers to man its companies, services, and the public sector, and to provide education and role models to the future generations.

III - The public sector has a role to play, both in financing and in overseeing the system.

- Financing: no country dispenses with public support to at least part of its higher education system. Fees and services, in themselves, cannot support good quality education and research. Private universities in the US rely heavily on philanthropy and public research grants and contracts for its research activities. Philanthropy does not exist in a significant scale outside the US, and government and public contracts are also limited.
- Overseeing: this is an important issue to be discussed. Latin America has a long tradition of public control of its universities, both public and private, which is usually bureaucratic and inefficient. Nobody, however (not even the World Bank) suggests leaving the whole system uncontrolled. Some kind of oversight is needed - but which kind, and how?

### **Some broad features of Brazilian education and research.**

- The rapid expansion of higher education. From the mid-sixties to 1980, fivefold increase, going from about 300 thousand to 1.5 million students
- The rapid increase of graduate education: from almost nothing in the sixties to about 40 thousand students in the mid-seventies.
- The rapid expansion of research: from very little before the sixties to a complex system organized in the seventies, spending about two billion dollars a year in R&D.

Higher education and research expanded rapidly, while basic and secondary education lagged behind. Education in Brazil today can be described by the following:

- Basic education, from seven to 15, is provided for free and with enough places almost everywhere, except in the poorer rural Northeast. However, about 50% of the students repeat in the first year, and advance slowly if at all in the following years. Most students never complete the mandatory eight years of basic education. Dropout rates are low at first, but increase dramatically when the students are 14 or 15. The few existing quality assessments suggest that even those who are promoted learn little in terms of literacy and numeracy.
- Secondary education, 16-18, is largely private, and geared toward preparation for entrance examinations to the universities. There are no technically or professionally oriented secondary schools, and contents are abstract, academic and unrelated to real life.
- The number of available places in higher education is close to the number of students completing secondary education each year; however, the likelihood of entering a good higher education institution is fully dependent on going into a good private secondary school, which depends, in turn, on social class, family education and income. Most places in higher education in Brazil today are in private institutions, of generally low quality. About 30% of the places are in public, usually better public institutions.

### **The broader context: general features**

Higher education and research expanded as part of a broader process of social change, economic growth and modernization. Some general features of this process:

- It corresponded to an intense process of social change, which transformed the country's face in two decades:
- Urbanization: Brazil is now 70% urban
- Intense social mobility: migration from country to town, creation of middle-class jobs and an extended service sector, expansion of the State.
- Demographic change: dramatic drop in fecundity rates, change in the country's demographic pyramid.

### **Perverse side of the modernization process:**

Large segments of the population did not benefit from the process of social change, but were affected by it.

- Disorganization of traditional patterns of life in rural areas and small towns, with heavy migration to the large and middle-size towns, creating problems of urban decay: slums, urban violence, and environment deterioration.
- Brazil has one of the highest levels of income inequality in the world. This is not because the income of the poor deteriorated (which did not seem to have happened), but because economic growth remained concentrated in a small sector of the population.

A significant part of the benefits received by middle and high-income groups came from rents derived, one way or another, from the public sector:

- Through the expansion of public bureaucracies at all levels (state, federal, municipal); with special arrangements for early and well-paid retirement benefits.
- Through the expansion of state-owned companies;
- Through contracts between private firms and the public sector for public works, in fields such as road hydroelectric plants construction, and subsidized activities such as the alcohol program and weapons production.
- Through market protected industrial activities and services, from computers to car production, insurance and financial operations.

This modernization process was financed by a combination of three things:

- Foreign borrowing in the seventies, when capital was available at low rates in the international market;
- Productivity increases in industry, agriculture and services, and increase in the governments' tax raising capabilities, which provided the federal government with significant surpluses in the seventies.
- Inflation

### **The current transition: Stagnation, crisis and readjustment.**

In the eighties, as the debt crisis set in, the economy entered in a slump and the government lost its ability to keep paying with taxes or foreign loans for the maintenance of the public-supported side of the economy. As the military prepared to give way to a civilian government, interest groups organized to defend and increase their benefits in a more decentralized political context. The Sarney government and the 1988 Constitution were the climax of this process: almost everybody who could raise its voice got a slice of public benefits, from rights enshrined in the Constitution to access to the control of slices of the public sector, while inflation roared at 50 to 80% a month.

This situation was clearly untenable, but to redress it will not be so easy. The current government is faced with the following broad tasks:

- To stop the inflationary process, which requires reducing or ending the public deficit;
- To induce the economy to walk on its own feet, depending less on public support and trade barriers.
- To redress the problems of social inequality, partly by reducing the public benefits and subsidies of the middle and high-income groups, and making it more available to the poor.

### **The issues of higher education**

The issues of higher education and research should be seen on the light of this broad readjustment task. It is not a question of transferring public resources from the "traditional" to the "modern" side of the economy, as it was in the past, but of changing and reorganizing sectors which are already "modern," so that then can serve better the interests of society as a whole, and not only of those who are directly associated with them. The consequence of this difference is that, while in the past reform of educational and research institutions were

demanding by the groups active in the corresponding sectors, today these groups feel threatened in what they have already conquered and achieved, and tend to resist change.

I believe that, in Brazil today, and throughout Latin America as well, the main issues of higher education reform are the following:

#### *Efficiency in the use of resources.*

How to make public higher education more efficient and effective in the use of the resources it gets. In Brazil, the government spends between five and nine thousand dollars a year per student, several times more than countries like Chile or Argentina, where the quality of the graduates is not necessarily lower. Nine percent of this money goes to salaries, and only about one third of the students are enrolled in these institutions.

This sheer amount of money is a problem. The federal government in Brazil is supposed to spend 18% of the federal budget in education, half of it at the basic and secondary levels, which are provided by state and local governments. This amounts to about five billion dollars, and in 1970 3.4 billion, about 70%, were spent on higher education, to the benefit of about 300 thousand students. The state of São Paulo grants a fixed percentage of its tax revenues, about 10% to its three universities. This means around one billion dollars, which is spent with about 10% of the state's higher education students. Because of the generous retirement benefits, which are paid out of the university's budgets, the percentage of expenditures going to these benefits is reaching 50% of the budgets in some cases, and growing.

Several proposals have been made to redress this situation. The most radical is to slash the budget of public universities, ask them to recover their costs from the students, and transfer the resources to basic education. Today, public universities are forbidden by the 1988 Constitution to charge tuition. A milder proposal, which is expected to be implemented by the current government, is to develop some performance standards to evaluate the university's use of resources, and adjust the budget accordingly. The standards under consideration are very simple: Students per professors, degrees granted by students admitted, academic publications, and so forth. These standards could help to identify extreme deviations, and to suggest corrective measures. Budgets, that up to now are political and incremental, could be estimated from such evaluations.

The main problem with this proposal is that, at this point, public universities lack autonomy to fire personnel, or to transfer resources from salaries to other goals. Ninety percent or more of the budgets are for salaries, which are guaranteed by the federal government. The proposed solution is to grant the universities autonomy to run their budgets and personnel, which they resist, since they will be forced to take decisions they would rather leave to the government.

#### *Democratization.*

Traditionally, in Latin American universities, the expression "democratization" has meant internal democracy, that is, the control of universities by its professors, students and employees. Most Brazilian public universities are today "democratic" in this sense. Elections produce names that are sent to the government to approve, and in the last 10 years or so the government has almost always nominated the first name in the list. Democracy takes place also in collegial bodies and in the election of directors of schools and department heads. Democracy in this sense is usually referred to as "autonomy," but in a sense that is the opposite of what the government is talking now. For the government, autonomy means the freedom to take decisions on resource allocation, personnel and administration of resources, while the government monitors quality, efficiency, equity and other public goals. The current meaning within the university is the opposite: academic policies and goals are set internally, if possible by consensus, and the government foots the bill.

Democratization, however, can be understood in a difference sense, as equal educational opportunities, or equal access to the benefits of public education. The two are not necessarily correlated. The inequities of Brazilian higher education are well known, and include:

- Within the system: free, better quality education for children of middle and high classes who qualify to enter public universities, against the children of poorer sectors, which are forced to enroll in lower quality, paying private institutions. Those who qualify for graduate education are better still: not only they don't pay, but also they usually receive a stipend.
- Between systems: large disproportion in the per capita expenditures for basic, secondary and higher education, going from a few hundred dollars a year to the former to almost ten thousand a year to the latter.

One proposal to redress this situation is to lead public universities to lower their standards and accept more students. If this is carried on, it could bring Brazil to the situation of several other Latin American countries, where quality education is provided by the private sector, or a few, very selective public institutions, while public universities take care of mass, low quality education. The other would be for the public universities to differentiate, offering different products (like day and evening courses) for different groups. Evening courses have existed for many years at the Universidade de São Paulo, but they are formally equivalent to the day courses, and the entrance requirements are the same.

### *Differentiation*

Differentiation means to allow different people and institutions to pursue different goals in higher education: professional education, research training, vocational training, continuous education, and so forth. In practice, Brazilian higher education is highly differentiated, given the large differences in quality and resources among institutions. In theory, all of them are striving to fulfill the Humboldtian ideal of association between research and teaching and interdisciplinarity, as their ultimate goals. One proposal for reducing waste and increasing the efficiency of the system is to accept that differentiation is a good thing. Not all higher education institutions in the US is or should strive to be like Harvard, and for the same reason not all higher education institutions in Brazil should try to become like the Universidade de São Paulo.

The current system is profoundly egalitarian in principle, and highly discriminatory in practice. Since everybody has to be a scholar, but only few are, the rest are failed scholars. One way of redressing this situation is to accept that not everybody has to be a scholar, but can be something else. For this solution to work, however, the one-dimensional hierarchy of quality based on research should be replaced by a plurality of goals and values. Meanwhile, proposals to differentiate are perceived as attempts to freeze invidious inequalities, and are resisted by those who would be afraid to be left out. The alternative is to lower the requirements to enter the top ranks of scholarship and research. The most successful mechanism for higher education evaluation in Brazil, carried on by CAPES at the Ministry of Education for graduate courses, has been increasing the number of "A" and "B" ratings in the last several years, thanks to a peer review system based on names proposed by the courses to be evaluated. At the undergraduate level, short-term, vocational courses supposed to grant specialized qualifications do not last long: they either fail to attract students, or drift toward the common, formal standards of university-level education, based on a minimum of four years teaching loads.

### *Quality assessment and improvement*

There is a broad consensus in Brazil that the quality of higher education is not very good, but there is little agreement on what to do to improve it. In theory, there is Federal

Council of Education, now being revamped, which should provide accreditation to university and non-university higher education institutions. In practice, public universities are created by law, and are free from interference from the Council or the Ministry, except in extreme situations. Private universities depend on the Council's approval to exist, but decisions are taken case by case, depending on the strength of their lobbying efforts. University degrees can be granted by non-university institutions (the so-called "instituições isoladas"), which are subject to more control if they are private. Because of that, they get together in federations that, on time, are recognized as universities, and granted full autonomy.

A strong pressure for quality control comes from professional associations of medical doctors, engineers and lawyers. They would like to keep the standards of their professions high, and to restrict the number of people in them. In the Brazilian system, professional degrees granted by recognized institutions are legally valid. However, the Lawyers' association has introduced a bar examination, and there some voluntary board examinations for medical doctors have been introduced in some regions.

The case for quality control of publicly financed higher education institutions is straightforward, but is less clear for private institutions. If someone wants to buy an educational service from a private institution, this could be considered as a private contract, in which the state should not interfere. Even if the quality of the education provided is not very good, it would probably add some value to the student, otherwise he would not pay for it.

#### *Professional deregulation*

This matter is complicated, however, by the legal entitlements granted by law to those holding university degrees. Most professions in Brazil today are regulated by law, controlling chunks of the labor market - you need to have a diploma in communications to write in a newspaper, or a diploma in statistics to do empirical research. These professional monopolies are more enforced in the traditional professions than in the new ones, but the public sector, at least tends to follow the letter of the law, granting automatic promotions and other benefits in degree holders.

The solution for the quality problem in the private sector requires to reduce the professions' legal entitlements to a minimum, and to dissociate degree granting from professional accreditation. With most professions unregulated, the market could take care of itself.

#### *Evaluation*

For the public sector, "evaluation" is the buzzword. So far, the only nationally recognized evaluation system of undergraduate courses in Brazil is the one made by *Playboy Magazine* every year. The Ministry of Education has been talking on evaluation since the early eighties, but the only thing it did so far was to provide grants to self-evaluation exercises in a few institutions. The current system of performance indicators being put together by the Ministry of Education does not deal with the contents of education, just with the efficiency in the use of resources. It is unlikely that the Ministry of Education will be able to put together a centralized system of undergraduate education evaluation. However, independent concurring rankings of institutions, both public and private, are bound to appear and proliferate, gradually building up a market for quality education.

### **The issues of research**

#### *A top-down model*

The issues on research are similar to those in higher education. It grew very rapidly at the top, but did not penetrate society as a whole. Graduate education and research gained strength in Brazil during the military regime, from the late sixties to the early eighties. Older, leftist intellectuals were proscribed by the military, but a new generation of students and

researchers entered the new institutions and made use of the resources granted by the government. Research was to be the part of a grand project of national development, and was conceived in a strictly one-way, top down model. Sophisticated military projects - atomic energy, military jet planes, rockets, sophisticated electronics - would enhance the country's military prowess and provide contracts and know how to the productive sector. Large, state-owned corporations in oil, electricity, telecommunications, mining and transport would play the role of big contractors, and transfer knowledge to the private sector. Scientific research in universities would generate professional competence that would lead to improvement of undergraduate education, and applied knowledge that would be transferred to the military sector and to the large corporations, trickling down later to the remaining of the economy.

In the early eighties, this whole project was in crisis. The private preferred to buy ready-made technologies and processes from abroad, rather than to contract Brazilian research groups. Uncontrolled, the large military projects kept expanding its costs, while the government lost its ability to pay for them. Academic science, even if of some quality, remained mostly isolated, and did not transfer knowledge and competence in enough volume to undergraduate education or to the productive sector. By the end of the decade, the large state-owned corporations started to reduce their research budget and their long-term contracts some universities.

The crisis of the model - which can be called the Geisel model, as a reference to President Ernesto Geisel's ambitious project of national development - coincided with the strengthening of the researchers as a pressure group, acting in the political space opened by the new civilian regime. In 1985 a new Ministry of Science and Technology was created, increasing the size of the S&T bureaucracy. In 1988 the Sarney government expanded the number of fellowships granted for studies in the country and abroad, so that, today, about 70% of the money from the National Research Council is spent to such fellowships, mostly for students at the M.A. level. In the early nineties a federal career for science and technology was created, bringing together all employees from 18 institutions, both administrative and scientific, with equal salary and promotion patterns and rules. In the mid-nineties, most of the large projects of the previous decade are stalled, the number of graduate students coming out from the universities stagnated, and, although the number of scientific publications written by Brazilians has increased, the scientific and technological gap between Brazil and the developed economies is increasing very rapidly.

#### *A new approach for an open economy and society*

Clearly the Geisel model, geared for scientific and technological self-sufficiency, will not work. A new science and technology policy is needed:

- To spread innovation capabilities in the economy as a whole, not just on the top corporations.
- To maintain the best research groups in the country up to international standards, so that they could keep up with their fields, and help the process of knowledge transfer.
- To reevaluate the large projects of technological self-sufficiency of the past, on the light of proper cost figures, scientific expertise and economic potential.
- To reduce waste with second-rate graduate education and research, transferring the resources to professional education, on one hand, or high quality, internationally related academic research on the other.

## **Conclusions**

All these transformations are more easily said than done. One difficulty is that most of these proposals go against vested interests, or ingrained expectations, which are hard to change. More seriously, perhaps, is the fact that Brazilians have learned some ways of developing and maintaining a small number of good quality, elite institutions, but do not know how to attend to the needs of the majority. This applies to basic and secondary education, to general undergraduate education, and the large number of small and mid-size firms that make up most of its economy. It will be a hard learning process for the years ahead, which is just in its beginnings.